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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/529,915

04/01/2005

Hideki Akita

KAS-241

5256

24956 7590 07/12/2007  
MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.  
1800 DIAGONAL ROAD  
SUITE 370  
ALEXANDRIA, VA 22314

EXAMINER

HANNON, THOMAS R

ART UNIT

PAPER NUMBER

3682

MAIL DATE

DELIVERY MODE

07/12/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/529,915

Applicant(s)

AKITA ET AL.

Examiner

Thomas R. Hannon

Art Unit

3682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,4-7 and 10-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-7 and 10-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-7, and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akita et al. Us 5,490,730 in view of Pacholke US 4,715,972.

Akita discloses a slide bearing assembly comprising at least a shaft (10) and a bushing (9), the bushing being made of a porous sintered material (col. 3, lines 47-50), wherein the bushing is impregnated with a lubricant containing solid lubricating fine particles made of  $\text{MoS}_2$ ,  $\text{WS}_2$  or hexagonal BN (col. 4, lines 4-12), and wherein the shaft and the bushing are used at surface pressure not lower than 6 Kgf/mm<sup>2</sup> and sliding speed in the range of 2 to 5 cm/sec. (col. 2, lines 18-20). Akita does not disclose the specific range of 2 to 30 wt% of the solid lubricating fine particles. Pacholke discloses a lubricant additive comprised of solid particles of solid lubricant including  $\text{MoS}_2$ ,  $\text{WS}_2$  and BN (col. 4, lines 29-33). Pacholke also discloses "The solid lubricant is employed in the additive compositions of the present invention at a level from about 0.01 to about 65 percent. The final selection of a level from this useful range will of course depend upon the application required and the selection of such a level is well within the skill of the artisan. The additive composition, containing the above concentration of solid lubricant particles, may conveniently be added to a gear oil composition to provide an effective amount of solid lubricant ranging from about 0.001 to about 15 percent...The specific concentration and the particle size distribution of the solid lubricant present in the gear oil may be varied as required by

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the specific conditions relating to the frictional and loading requirements of the gear system in operation such selection is again well within the skill of the artisan.” (Column 4, line 61 to column 5, line 11). The viscosity of the lubricant of Akita falls within the range claimed (col. 2, line 17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the amount of solid lubricating fine particles in the lubricant of Akita, because such an optimization is shown to be known in the lubricant art as taught by Pacholke.

With respect to claims 4 and 10, the bushing of Akita is made of a composite sintered alloy with a porosity of 5 to 30 vol% , and the bushing is subject to surface modification treatment including carburizing, nitriding and sulfonitriding (Akita claim 3).

With respect to claims 5 and 11, Akita discloses the fine particles of no more than 500 $\mu$ m (Akita claim 6).

With respect to claims 6 and 12, Akita discloses the shaft is subjected to surface modification treatment by performing carburizing, and then chemical conversion or sulfurizing treatment (Akita, claim 2).

With respect to claims 13 and 14, Akita discloses the use of such a slide bearing for a front component of an excavator (claim 17) and an arm of a crane (claim 18).

Applicant's arguments filed June 14, 2007 have been fully considered but they are not persuasive.

Applicant states “the numerical limitation of the content of solid lubricating fine particles in claim 1 of the present invention, however, was determined by the present inventors only after conducting various tests, obtaining data as shown in Figures 3 and 4 and studying and considering such data as explained in the description at page 14, line 2 to page 15, line 10 with

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reference to Figures 3 and 4, and thus is not well within the skill of the artisan in view of the teachings of '972." However, this argument is not persuasive, because the determination upper and lower limits of such a parameter is well within the skill level of the artisan as specifically set forth by Pacholke '972 at column 4, line 61- column 5, line 11, as set forth in the rejection.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas R. Hannon whose telephone number is (571) 272-7104. The examiner can normally be reached on Monday-Thursday (8:30-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Thomas R. Hannon  
Primary Examiner  
Art Unit 3682

trh